

Development of an In Flight Vision Self-Assessment Questionnaire for Long Duration Space Missions

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OVERVIEW

A NASA Flight Medicine optometrist teamed with a human factors specialist to develop an electronic questionnaire for crewmembers to record their visual acuity test scores and perceived vision assessment. It will be implemented on the International Space Station (ISS) and administered as part of a suite of tools for early detection of potential vision changes. The goal of this effort was to rapidly develop a set of questions to help in early detection of visual (e.g. blurred vision) and/or non-visual (e.g. headaches) symptoms by allowing the ISS crewmembers to think about their own current vision during their spaceflight missions.

PROCESS

An iterative process began with a Space Shuttle one-page paper questionnaire generated by the optometrist that was updated by applying human factors design principles. It was used as a baseline to establish an electronic questionnaire for ISS missions. Additional questions needed for the ISS missions were included and the information was organized to take advantage of the computer-based file format available. Human factors heuristics were applied to the prototype and then they were reviewed by the optometrist and procedures specialists with rapid-turn around updates that lead to the final questionnaire.

CONCLUSIONS

With about only a month lead time, a usable tool to collect crewmember assessments was developed through this cross-discipline collaboration. With only a little expenditure of energy, the potential payoff is great. ISS crewmembers will complete the questionnaire at 30 days into the mission, 100 days into the mission and 30 days prior to return to Earth. The systematic layout may also facilitate physicians' later data extraction for quick interpretation of the data. The data collected along with other measures (e.g. retinal and ultrasound imaging) at regular intervals could potentially lead to early detection and treatment of related vision problems than using the other measures alone.